

Ettner, et al.,
Beiersdorf 602
USSN 09/493,887

Prop sed Amendments to the Claims

Claims 1. - 29. (Canceled).

Claim 30 (New). A protein-containing hydrogel comprising a polyethylene glycol (PEG) matrix to which is bound one or more catalytically active polypeptides or proteins, wherein,

- (a) the matrix comprises an activated diisocyanato-PEG polymer further comprising unblocked urea groups;
- (b) the one or more catalytically active polypeptides or proteins possessing free radical scavenging activity; and
- (c) wherein the one or more catalytically active polypeptides or proteins are directly bound to the diisocyanato-PEG matrix via the unblocked urea groups.

Claim 31 (New). The hydrogel of claim 30, wherein the one or more catalytically active polypeptides or proteins is selected from the group consisting of catalase, superoxide dismutase, lactoperoxidase, glutathione peroxidase, myeloperoxidase, thyroid peroxidase, or a mixture thereof.

Claim 32 (New). The hydrogel of claim 30, wherein the one or more catalytically active polypeptides or proteins comprise catalase.

Claim 33 (New). The hydrogel of claim 30, wherein the one or more catalytically active polypeptides or proteins comprise superoxide dismutase.

Claim 34 (New). The hydrogel of claim 31, further comprising one or more metal-porphyrin complexes, and further wherein at least one of the metals is selected from the group consisting of iron, copper, magnesium and manganese.

Ettner, et al.,
Beiersdorf 602
USSN 09/493,887

Claim 35 (New). The hydrogel of claim 34, wherein the metal moiety of the metal-porphyrin complexes is selected from the group consisting of iron, copper, magnesium and manganese.

Claim 36 (New). The hydrogel of claim 31, wherein the PEG has a molecular weight of from 8,000 to 18,000 g/mol.

Claim 37 (New). The hydrogel according to claim 30, wherein the PEGs are activated by aliphatic, aromatic or araliphatic diisocyanates.

Claim 38 (New). The hydrogel according to claim 34, wherein the diisocyanate is 1,6 hexamethylene diisocyanate.

Claim 39. (New) The hydrogel of claim 30, further comprising one or more catalytically active polypeptides or proteins selected from the group consisting of proteases, metalloproteases and hydrolases.

Claim 40. (New) The hydrogel of claim 39, further comprising one or more catalytically active polypeptides or proteins selected from the group consisting of trypsin, collagenase, lysozyme, elastase, and phosphatase.

Claim 41. (New) A process for preparing the protein-containing hydrogel of claim 30, the process comprising the steps:

- (a) preparing the activated diisocyanato-PEG polymer having unblocked urea groups by reacting PEG with a diisocyanate in a solvent, wherein the reacting optionally takes place in the presence of a catalyst;
- (b) removing the solvent from the activated diisocyanato-PEG polymer;
- (c) contacting the activated diisocyanato-PEG polymer with the one or more catalytically active polypeptides or proteins under conditions that effectively permit the one or more polypeptides and proteins to covalently attach to the activated diisocyanato-PEG polymer by reacting with the unblocked urea groups.

Ettner, et al.,
Beiersdorf 602
USSN 09/493,887

Claim 42. (New) The process of claim 41, wherein the diisocyanate is either an aliphatic, aromatic or araliphatic diisocyanate.

Claim 43. (New) The process of claim 41 wherein the diisocyanate is selected from the group consisting of 1,6-hexamethylene diisocyanate, 1,12-dodecane diisocyanate, isophorone diisocyanate, methylcyclohexane 2,4- and/or 2,6-diisocyanate, dicyclohexylmethane 2,4'- and/or 4,4'-diisocyanate, cyclobutane 1,3-diisocyanate, cyclohexane 1,3- and 1,4-diisocyanate, 2,4- and/or 2,6-hexahydrotolylene diisocyanate, hexahydro-1,3- and/or 1,4-phenylene diisocyanate, and 1,3- and 1,4-phenylene diisocyanate, 2,4- and 2,6-tolylene diisocyanate, diphenylmethane 2,4'- and/or 4,4'-diisocyanate and naphthylene 1,5 diisocyanate.

Claim 44. (New) The process of claim 41 wherein the diisocyanate is 1,6-hexamethylene diisocyanate.

Claim 45. (New) The process of claim 41 wherein the PEG is of a molecular weight between 6,000 g/mol to 35,000 g/mol.

Claim 46. (New) The process of claim 41 wherein the PEG is of a molecular weight between 8,000 g/mol to 18,000 g/mol.

Claim 47. (New) The process of claim 41 wherein the PEG is of a molecular weight between 10,000 g/mol to 15,000 g/mol.

Claim 48. (New) A polymer-protein hydrogel comprising,

a) a polymer matrix comprising activated diisocyanato-polyethyleneglycol (PEG) wherein the activated PEG provides urea groups suitable for forming crosslinks with a polypeptide; and

b) a protein component crosslinked to the polymer matrix through the activated polymer's urea groups; and

c) wherein the complete hydrogel's protein component consists essentially of catalytically active polypeptides having free-radical scavenging activity.

Ettn r, et al.,
Bei rsdorf 602
USSN 09/493,887

Claim 49 (New). The hydrogel of claim 47, wherein the one or more catalytically active polypeptides or proteins is selected from the group consisting of catalase, superoxide dismutase, lactoperoxidase, glutathione peroxidase, myeloperoxidase, thyroid peroxidase, or a mixture thereof.

Claim 50 (New). The hydrogel of claim 47, wherein the one or more catalytically active polypeptides or proteins comprise catalase.

Claim 51 (New). The hydrogel of claim 47, wherein the one or more catalytically active polypeptides or proteins comprise superoxide dismutase.